

Applicants: Michael STEPPUTAT *et al.*
Application No. 10/520,123

REMARKS

Reconsideration and allowance, in view of the foregoing amendments and following remarks, are respectfully requested.

Claims 1-17 are pending in the application.

Applicants note with appreciation the Examiner's indication that claims 12 and 13 contain allowable subject matter, and would be allowable if rewritten in independent form to contain all of the limitations of the base claim and any intervening claims. Applicants have not rewritten claims 12 and 13 in independent form at this time in order to avoid any unnecessary claim fees. Applicants have amended claim 17 to remove unnecessary limitations. The amendments to claim 17 are not intended to make it narrower in any way. All other claim amendments are to correct spelling errors.

The Examiner rejected claims 1 and 17 under 35 U.S.C. § 102(b) as being anticipated by Hnilica *et al.* (U.S. Patent No. 5,798,832). The Examiner indicated that the term "automatically," recited in claim 1, in relation to "focused automatically" was not given patentable weight since it was indefinite. However, the Examiner did not reject claim 1 based on 35 U.S.C. § 112, second paragraph. Applicants respectfully submit that it is improper for the Examiner to simply ignore terms in the claim, and further disagree that the claim term is not clear. The meaning of "focused automatically" should be clear to one of ordinary skill in the art upon reading the claim, as well as reading the claims in view of the specification. See pages 2-3 and 5-7, particularly the paragraphs

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spanning the successive pages, for some examples of relevant discussion of this claim term according to some embodiments of the invention.

Applicants respectfully submit that Hnilica *et al.* does not disclose a method, as recited in claim 1, in which a pulsed laser beam is focused automatically on a work piece to generate a laser-induced plasma. Furthermore, Applicants respectfully submit that Hnilica *et al.* fails to disclose essentially all of the limitations recited in the “wherein” clause of claim 1.

In particular, Hnilica *et al.* discloses a device 10 which does not contain any auto-focusing optics at all. As can be seen in Fig. 4, the laser beam 12 is focused inside a measuring head 14 by radiation optics 22 mounted at a defined and constant distance from an exit opening 38 of the casing 32 of measuring head 14, in such a manner that the focal point of the laser beam is in the plane of the exit opening 38. With this, no auto-focusing ability of the radiation optics 22 is disclosed for the device 10 (see column 5, line 67, column 6, line 8, and column 8, lines 28-41).

Hnilica *et al.* does not teach a method wherein prior to generating a plasma, a distance d of an auto-focusing optic from the surface of a workpiece is determined. Beside the fact that Hnilica *et al.* does not disclose any auto-focusing optics at all, the laser 12 of the device 10 is constantly focused with an unchanged constant focal distance throughout the measurements. There is no indication in Hnilica *et al.* that the focal distance is changed during measurement. There is also no indication at all that the focal distance is changed after the manufacture of the measuring head 14. Technically, there also is no need to determine such a distance. Hnilica *et al.*, rather, teaches that the distance

from the surface of the workpiece and the radiation optics 22 remains constant throughout the measurements (see column 5, lines 28-41). Thus, the focal distance (the distance between the plane of the exit opening 38 and the radiation optics 22) is not determined prior to generating a plasma.

Hnilica *et al.* does not teach a method wherein additional geometry parameters P1, P2 ... PN of a potential measuring location on said workpiece surface are determined, where at least one of said additional parameters lies within a predefined range (T1 ... T2). A prerequisite for as accurate as possible measurement is, namely, that the geometric nature of the measurement location is largely identical with the one present in plotting the calibration curve. If the calibration curve is measured with the geometric parameters P1, P2 .. PN, the calibration curve only fulfills its intended function of precise calibration if, with otherwise fixed parameters, such as, in particular, laser parameters, the same geometric parameters are present as in measuring a test object. To approach this optimum, in a first step, a tolerance range (T1 .. T2) is predefined for the geometric parameters P1, P2 .. PN, which represent as closely as possible the geometric parameters present when performing the calibration. In other words, the predefined geometric parameters should correspond with regard to type and tolerance range to the geometric parameters present in recording the calibration curve. The breadth of the tolerance range of the geometric parameters is yielded by the requirements of the application regarding accuracy in determining the concentration, and by the limits set by the employed components. In a second step, the same geometric parameters P1, P2 .. PN are measured at potential measurement locations on the workpiece. In auto-focusing, the distance d of the auto-focusing optics

from the workpiece surface is continuously determined as a geometric parameter. In accordance with the present invention, elemental analysis is performed only for the potential measurement locations at which at least one of the additional geometric parameters lies within a predefined tolerance range (T1 .. T2).

Nothing of comparable content can be found in the disclosure of Hnilica *et al.* The disclosure to which the Examiner is referring in this context (column 6, lines 16-28) describes the measuring head 14 as comprising at least one movable spacer 34 mounted in or on the casing 32. The spacer 34 is completely inside the casing, whereas the spacer will only release a triggering means 38 for the laser 12 when the spacer 34 is in its second position. From this, it is obvious that the disclosure relied upon does not disclose the feature that geometry parameters P1, P2 ... PN of a potential measuring location on said workpiece surface are determined, where at least one of said additional parameters lies within a predefined range (T1 ... T2). This also holds true for the rest of Hnilica *et al.*

In regard to claim 17, Hnilica *et al.* does not disclose any auto-focusing device for the laser beam, nor a unit for deflecting said laser beam transverse to the direction in which the test object is moving. The latter could not even be realized for the device described by Hnilica with the measuring head 14 being positioned on the material sample and the radiation optics 22 being fixed at a defined constant distance from an exit opening 36 of the casing 32 such that a focal point of the laser beam being in the plane of said exit opening, and thus the focal point of the laser beam being on the

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surface of the material sample during measurement. Any deflection of the laser beam then would result in an out of focus state of the laser beam. So for a person of ordinary skill in the art, it would not be obvious at all to combine the device disclosed by Hnilica *et al.* with a unit for deflecting the laser beam. Even if technically possible, it would not make any sense.

Therefore, Applicants respectfully submit that claims 1 and 17 are patentable over Hnilica *et al.*, and request that the rejection under 35 U.S.C. § 102(b) be withdrawn.

The Examiner rejected claims 2, 3, and 6 under 35 U.S.C. § 103(a) as being unpatentable over Hnilica *et al.* in view of Fig.1 of the current application. Applicants respectfully traverse for at least the following reasons.

Applicants respectfully submit that the Examiner has failed to establish a *prima facie* case of obviousness in accordance with the requirements of the recent Supreme Court decisions. In particular, the Examiner did not properly apply the factors required by the Supreme Court in *Graham v. John Deere*, 383 U.S. 1, 148 USPQ 459 (1966), which were recently reaffirmed and further clarified by the Supreme Court in *KSR International Co. v. Teleflex, Inc.*, 550 U.S. __, 82 USPQ2d 1385 (2007). Consequently, the Examiner is required to make a factual determination on the following:

- (1) determining the scope and content of the prior art;
- (2) ascertaining the differences between the claimed invention and the prior art; and
- (3) resolving the level or ordinary skill in the pertinent art.

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The U.S. Patent and Trademark Office published guidelines in the Federal Register on October 10, 2007 to provide guidance to examiners in applying the law of obviousness resulting from the recent KSR decision. (Examination Guidelines for Determining Obviousness Under 35 U.S.C. 103 in View of the Supreme Court Decision in *KSR International v. Teleflex, Inc.*, 72 Fed. Reg. 195, 57526-57535.) In particular, the Patent Office Guidelines state that “the question of obviousness must be resolved on the basis of these factual determinations.” *Id.* at 57527. In particular, the Patent Office noted that “in determining the scope and content of the prior art, Office personnel must first obtain a thorough understanding of the invention disclosed and claimed in the application under examination by reading the specification, including the claims, to understand what the applicant has invented. The scope of the claimed invention must be clearly determined by giving the claims the ‘broadest reasonable interpretation consistent with the specification.’” *Id.* (Internal citations omitted.) The Patent Office Guidelines indicate that the Examiner must ascertain the differences between the claimed invention and the prior art and include an indication of the level of ordinary skill in the art. *Id.* at 57528.

Applicants respectfully submit that the Examiner is required by the Supreme Court decisions, and further specified by the U.S. PTO Guidelines published on October 10, 2007, to give the broadest reasonable interpretation of the term “focused automatically” consistent with the specification. Instead, the Examiner indicated that he gave no patentable weight to the term, and that no further consideration was given. Therefore, Applicants respectfully submit that the Examiner

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failed to determine the scope and content of the prior art, and failed to ascertain the differences between the claimed invention and the prior art, as required by *Graham v. John Deere* and reaffirmed by the Supreme Court in *KSR International v. Teleflex*. Furthermore, the Examiner failed to make a factual finding of the level of ordinary skill in the pertinent art. Thus, for at least these reasons, Applicants respectfully submit that the Examiner has failed to establish a *prima facie* case of obviousness of claims 2, 3, and 6, each of which depends from base claim 1. Applicants therefore respectfully request that the rejection under 35 U.S.C. § 103(a) be withdrawn.

The Examiner rejected claim 9 as being obvious from Hnilica *et al.* Applicants respectfully traverse for at least the same reasons noted above with regard to claims 2, 3, and 6. In particular, claim 1 is also the base claim for claim 9, and thus Applicants respectfully submit that the Examiner failed to establish a *prima facie* case of obviousness. Applicants respectfully submit that claim 9 is in condition for allowance, and request that the rejection under 35 U.S.C. § 103(a) be withdrawn.

The Examiner rejected claims 4 and 5 under 35 U.S.C. § 103(a) as being unpatentable over Hnilica *et al.* in view of portions of Applicants' specification, which the Examiner interpreted as being admitted prior art. Applicants respectfully traverse this rejection for at least the reasons noted above in regard to claims 2, 3, and 6. In particular, claims 4 and 5 each contains claim 1 as their base claim. Applicants thus respectfully submit that the Examiner has failed to establish a *prima facie* case of obviousness of claims 4 and 5. Therefore, Applicants respectfully submit that claims 4 and 5 are in condition for allowance, and request that the rejection under 35 U.S.C. § 103(a) be withdrawn.

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The Examiner rejected claims 7 and 8 under 35 U.S.C. § 103(a) as being unpatentable over Hnilica *et al.* in view of Carlhoff (U.S. Patent No. 5,702,550). Applicants respectfully traverse for at least the same reasons noted above with regard to claims 2-6 and 9. In particular, Applicants respectfully submit that the Examiner has failed to establish a *prima facie* case of obviousness for claims 7 and 8, since claims 7 and 8 each contains claim 1 as their base claim. Applicants respectfully submit that claims 7 and 8 are in condition for allowance, and request that the rejection under 35 U.S.C. § 103(a) be withdrawn.

The Examiner rejected claims 10, 11, 14, 15, and 16 under 35 U.S.C. § 103(a) as being obvious over Hnilica *et al.* as applied to claim 1, as well as other portions of Hnilica *et al.* Applicants respectfully traverse this rejection for at least the same reasons noted above with regard to claims 2-9. In particular, Applicants respectfully submit that the Examiner has failed to establish a *prima facie* case of obviousness for claims 10, 11, 14, 15, and 16, since each of these claims contains claim 1 as their base claim. Applicants respectfully submit that claims 10, 11, 14, 15, and 16 are in condition for allowance, and request that the rejection under 35 U.S.C. § 103(a) be withdrawn.

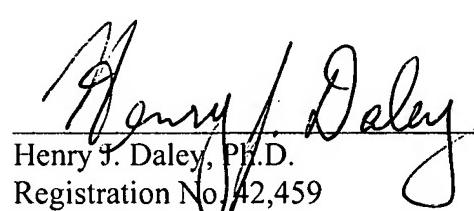
Applicants have addressed all of the Examiner's objections and rejections, and respectfully submit that the application is now in condition for allowance.

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Applicants' representative encourages the Examiner to contact him at the below-noted telephone number if it would help to expedite the prosecution of this case.

Respectfully submitted,

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